def accept\_matrix(M) :

print("\nEnter the order of the Matrix (row,col) : ")

r = int(input("\trow = "))

c = int(input("\tcol = "))

print("Enter the elements of the Matrix : \n")

for i in range(r) :

A = []

for j in range (c) :

A.append(int(input()))

M.append(A)

print("\nMatrix accepted successfully\n")

def display\_matrix(M,r,c):

print("Matrix (%d,%d) : "%(r,c))

for i in range(r) :

print("\t\t",end=' ')

for j in range(c):

print("%3d"%M[i][j],end=' ')

print("")

def addition\_matrix(M1,M2,M3,r,c) :

for i in range(r) :

A = []

for j in range(c):

A.append(M1[i][j] + M2[i][j])

M3.append(A)

def substraction\_matrix(M1,M2,M3,r,c) :

for i in range(r) :

A = []

for j in range(c):

A.append(M1[i][j] - M2[i][j])

M3.append(A)

def multiplication\_matrix(M1,M2,M3,r1,c1,c2) :

for i in range(r1) :

A = []

for j in range(c2) :

sum = 0

for k in range(c1) :

sum = sum + (M1[i][k] \* M2[k][j])

A.append(sum)

M3.append(A)

def find\_transpose\_matrix(M,r,c,T) :

for i in range(c):

A = []

for j in range(r):

A.append(M[j][i])

T.append(A)

def main():

while True :

print("\t\t\t1: Accept Matrix");

print("\t\t\t2: Display Matrix");

print("\t\t\t3: Addition of Matrices");

print("\t\t\t4: Substraction of Matrices");

print("\t\t\t5: Multiplication of Matrices");

print("\t\t\t6: Transpose Matrix");

print("\t\t\t7: Exit");

ch = int(input("Enter your choice : "))

M3 = []

if (ch == 7):

print ("End of Program")

break

elif (ch==1):

M1 = []

M2 = []

print("Input First Matrix ")

accept\_matrix(M1)

r1 = len(M1)

c1 = len(M1[0])

print("Input Second Matrix ")

accept\_matrix(M2)

r2 = len(M2)

c2 = len(M2[0])

elif (ch==2):

print("\tFirst ",end=' ')

display\_matrix(M1,r1,c1)

print("\tSecond ",end =' ')

display\_matrix(M2,r2,c2)

elif (ch==3):

print("\tFirst ",end=' ')

display\_matrix(M1,r1,c1)

print("\tSecond ",end =' ')

display\_matrix(M2,r2,c2)

if(r1 == r2 and c1 == c2) :

addition\_matrix(M1,M2,M3,r1,c1)

print("\tAddition ")

display\_matrix(M3,r1,c1)

else :

print("Addition not possible (order not same)")

elif (ch==4):

print("\tFirst ",end=' ')

display\_matrix(M1,r1,c1)

print("\tSecond ",end =' ')

display\_matrix(M2,r2,c2)

if(r1 == r2 and c1 == c2) :

substraction\_matrix(M1,M2,M3,r1,c1)

print("\tSubstraction ")

display\_matrix(M3,r1,c1)

else :

print("substraction not possible (order not same)")

elif (ch==5):

print("\tFirst ",end=' ')

display\_matrix(M1,r1,c1)

print("\tSecond ",end =' ')

display\_matrix(M2,r2,c2)

if(c1 == r2) :

multiplication\_matrix(M1,M2,M3,r1,c1,c2)

print("\tMultiplication ")

display\_matrix(M3,r1,c2)

else :

print("Multiplication not possible ")

elif (ch==6):

print("\tFirst ",end=' ')

display\_matrix(M1,r1,c1)

find\_transpose\_matrix(M1,r1,c1,M3);

print("\tTranspose ",end=' ');

display\_matrix(M3,c1,r1)

print("\tSecond ",end =' ')

display\_matrix(M2,r2,c2)

M3 = []

find\_transpose\_matrix(M2,r2,c2,M3);

print("\tTranspose ",end=' ');

display\_matrix(M3,c2,r2)

else :

print ("Wrong choice entered !! Try again")

main()

quit()